[0004] One example of a radio access network is the Universal Mobile Telecommunications (UMTS) Terrestrial Radio Access Network (UTRAN). The UMTS is a third generation system which in some respects builds upon the radio access technology known as Global System for Mobile communications (GSM) developed in Europe. UTRAN is essentially a radio access network providing wideband code division multiple access (WCDMA) to user equipment units (UEs). The Third Generation Partnership Project (3GPP) has undertaken to evolve further the UTRAN and GSM-based radio access network technologies.

[0005] As those skilled in the art appreciate, in W-CDMA technology a common frequency band allows simultaneous communication between a user equipment unit (UE) and plural base stations. Signals occupying the common frequency band are discriminated at the receiving station through spread spectrum CDMA waveform properties based on the use of a high speed, pseudo-noise (PN) code. These high speed PN codes are used to modulate signals transmitted from the base stations and the user equipment units (UEs). Transmitter stations using different PN codes (or a PN code offset in time) produce signals that can be separately demodulated at a receiving station. The high speed PN modulation also allows the receiving station to advantageously generate a received signal from a single transmitting station by combining several distinct propagation paths of the transmitted signal. In CDMA, therefore, a user equipment unit (UE) need not switch frequency when handoff of a connection is made from one cell to another. As a result, a destination cell can support a connection to a user equipment unit (UE) at the same time the origination cell continues to service the connection. Since the user equipment unit (UE) is always communicating through at least one cell during handover, there is no disruption to the call. Hence, the term "soft handover." In contrast to hard handover, soft handover is a "make-before-break" switching operation.

[0006] The Universal Mobile Telecommunications (UMTS) Terrestrial Radio Access Network (UTRAN) accommodates both circuit switched and packet switched connections. In this regard, in UTRAN the circuit switched connections involve a radio network controller (RNC) communicating with a mobile switching center (MSC), which in turn is connected to a connection-oriented, external core network, which may be (for example) the Public Switched Telephone Network (PSTN) and/or the Integrated Services Digital Network (ISDN). On the other hand, in UTRAN the packet switched

connections involve the radio network controller communicating with a Serving GPRS Support Node (SGSN) which in turn is connected through a backbone network and a Gateway GPRS support node (GGSN) to packet-switched networks (e.g., the Internet, X.25 external networks). MSCs and GSNs are in contact with a Home Location Register (HRL), which is a database of subscriber information.

[0007] There are several interfaces of interest in the UTRAN. The interface between the radio network controllers (RNCs) and the core network(s) is termed the "Iu" interface. The interface between a radio network controller (RNC) and its base stations (BSs) is termed the "Iub" interface. The interface between the user equipment unit (UE) and the base stations is known as the "air interface" or the "radio interface" or "Uu interface". In some instances, a connection involves both a Serving or Source RNC (SRNC) and a target or drift RNC (DRNC), with the SRNC controlling the connection but with one or more diversity legs of the connection being handling by the DRNC. An Inter-RNC transport link can be utilized for the transport of control and data signals between Source RNC and a Drift or Target RNC, and can be either a direct link or a logical link as described, for example, in International Application Number PCT/US94/12419 (International Publication Number WO 95/15665). An interface between radio network controllers (e.g., between a Serving RNC [SRNC] and a Drift RNC [DRNC]) is termed the "Iur" interface.

[0008] A base station is typically located near the center of its associated cell. A base station can have plural sectors, with each sector having one or more antenna. The antenna of each sector are directed to cover a certain geographical portion of the cell. For example, a cell may comprise three or six essentially triangular sectors, with the antenna of each sector positioned and directed to cover the area of its triangular sector. The antenna of all sectors are generally connected to hardware at a common base station site.

[0009] Having more than one antenna per sector of a cell provides for diversity branches of a link with a user equipment unit (UE) in communication with the base station. Employment of diversity antennas for a sector of a cell improves reception quality and (to some extent) eliminates the effect of fading.

[00010] Using diversity antennas at a sector provides reception gain, as more than one branch of the radio link with the user equipment unit (UE) can be established. However, having two different branches (with separate signal routes and hardware components with different delay figures (mean value and variance)) results in delay differences between the two branches and delay misalignment. Thus, employment of diversity antennas also involves branch delay differences. That is, the differing branches of the radio link may have signals with corresponding differing arrival times and differing signal processing delays, thereby making it difficult to analyze collectively the signals of the respective branches to obtain perhaps a more accurate resultant signal. These branch delay differences are caused, at least in part, by an accumulation of delay differences in different hardware components used to process each branch. Each branch of the radio link is applied at the base station to a series of hardware components for the branch. Although the series of hardware components, and functions of the hardware components, are essentially the same from one branch to another, as a practical matter the individual hardware components do have differing processing delay times.

[00011] Moreover, there are also delay difference components induced by environmental conditions, equipment aging, and direction of arrival of a signal. All these factors, individually or cumulatively, can result in substantial delay differences between branches of a radio link, which degrade or completely defeat any processing gain sought by usage of diversity antennas.

[00012] In code division multiple access systems, a precise delay alignment between the branches is necessary in order to obtain a reasonable gain when using diversity antennas. Otherwise the gain from diversity is negligible and not worth the complexity.

[00013] An attempt has previously been made to compensate for the delay differences between branches of a radio link received by diversity antennas at a sector of a base station. Typically the delay differences are calculated based on certain hardware delay mean values which are measured at the hardware factory and stored in a memory (e.g., flash memory) on a board or the like which bears the hardware. Also, delays occasioned by cabling (e.g., between hardware components) is calculated according to cable type and length. Using the stored delay differences for the hardware and the